

TURN SIGNAL AND HAZARD WARNING SYSTEMS

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GENERAL INFORMATION

Following are general descriptions of the major components in the XJ (Cherokee)/YJ (Wrangler) model turn signal and hazard warning systems. Refer to Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams.

TURN SIGNAL SYSTEM

With the ignition switch in the ON or ACCESSORY position and the turn signal switch lever (YJ) or multi-function switch control lever (XJ) moved up (right turn) or down (left turn), the turn signal system is activated.

When the turn signal system is activated, the selected (right or left) turn signal indicator lamp, front park/turn signal lamp and rear tail/stop/turn signal lamp bulb filaments will flash. With the headlamp switch in the OFF position, the turn and front side marker lamps flash in unison. With the headlamp switch in the ON position, the turn and front side marker lamps flash alternately.

HAZARD WARNING SYSTEM

The hazard warning is activated by a switch button located below the ignition lock cylinder (YJ) or on the top of the steering column (XJ) between the steering wheel and the instrument panel. The hazard warning flasher (YJ) or combination flasher (XJ) receives battery feed at all times, and the system is functional regardless of ignition switch position. The hazard warning switch button is identified with a double triangle. On YJ models, push the switch button in to activate the hazard warning system and pull the button out to turn system off. On XJ models, push in on the switch button to latch the switch and activate the hazard warning system, and push in on the switch button again to unlatch the switch and turn the system off.

When the hazard warning system is activated, all (right and left) turn signal indicator, front park/turn signal lamp and rear tail/stop/turn signal lamp bulb filaments will flash.

TURN SIGNAL FLASHER (YJ ONLY)

The turn signal flasher is located in the fuseblock module. It contains one fixed contact point and one contact point attached to a flexible bimetal arm. The contact points are normally closed. When a turn signal is activated, current flows through the flasher. As current flows through the bimetal arm it heats and flexes to pull the contact points open, stopping current flow. As the bimetal arm cools it straightens, until the contact points close and the cycle repeats.

The standard flasher is designed to handle the current flow requirements of the factory installed lighting. If supplemental lighting is added to the turn signal circuits such as when towing a trailer with lights, the current flow through the flasher increases. This causes the flash rate to increase. It is recommended that the standard flasher be replaced with a heavy-duty (hazard warning) flasher when supplemental lighting is added.

However, when a turn signal bulb fails with a standard flasher, the remaining bulbs in that circuit will light, but not flash. This will give the driver an indication to check the turn signal bulbs. Because a heavy-duty flasher has different internal circuitry, a failed bulb will not prevent the remaining bulbs in the circuit from flashing. Therefore, it is recommended that an occasional visual inspection of exterior turn signal lamp operation be performed when a heavy-duty flasher is installed.

HAZARD WARNING FLASHER (YJ ONLY)

The hazard warning flasher is located in the fuseblock module. The hazard warning flasher contains two normally open contact points mounted to two flexible arms. A bimetal strip is attached between the two arms. When the hazard warning is activated, current flows through the flasher. As the current flows through the bimetal strip it heats and pulls the flexible arms together until the contact points close,

allowing current flow to the lamps. As the bimetal strip cools, the contact points are pushed open and the cycle repeats.

COMBINATION FLASHER (XJ ONLY)

The combination flasher functions as both the turn signal and hazard warning flasher on XJ models. The combination flasher is a smart relay that is located in the relay center under the lower instrument panel and inboard of the steering column. The combination flasher can not be repaired. If faulty, it must be replaced.

The combination flasher is designed to handle the current flow requirements of the factory installed lighting. If supplemental lighting is added to the turn signal circuits such as when towing a trailer with lights, the combination flasher will automatically compensate. This allows the flash rate to remain the same, regardless of electrical load increases. However, if a bulb fails in the turn signal or hazard warning circuits, the flash rate of the remaining bulbs in that circuit will increase to 120 flashes per minute or higher.

TURN SIGNAL/HAZARD WARNING SWITCH (YJ ONLY)

The turn signal and hazard warning switches are combined into a single unit mounted within the upper steering column bowl and beneath the steering wheel. The turn signal lever on the left side of the steering column is moved up or down to select the right or left turn signal switch position. The turn signals will only operate with the ignition switch in the ACCESSORY or ON position.

The hazard warning button on the right side of the steering column is pushed in to turn the hazard warning system on, or pulled out to turn the system off. The hazard warning system will operate regardless of ignition switch position. The turn signal/hazard warning switch can not be repaired. If faulty, the entire unit must be replaced.

MULTI-FUNCTION SWITCH (XJ ONLY)

The multi-function switch assembly (Fig. 1) is mounted to the left side of the steering column. This switch contains electrical circuitry for the following functions:

- turn signals
- hazard warning
- headlamp beam selection
- headlamp optical horn
- windshield wipers
- windshield washers.

The information contained in this group addresses only the switch functions for the turn signal and hazard warning circuits. For information relative to other switch functions, refer to the appropriate group. However, the multi-function switch can not be repaired. If any function of the switch is faulty, the entire switch assembly must be replaced.

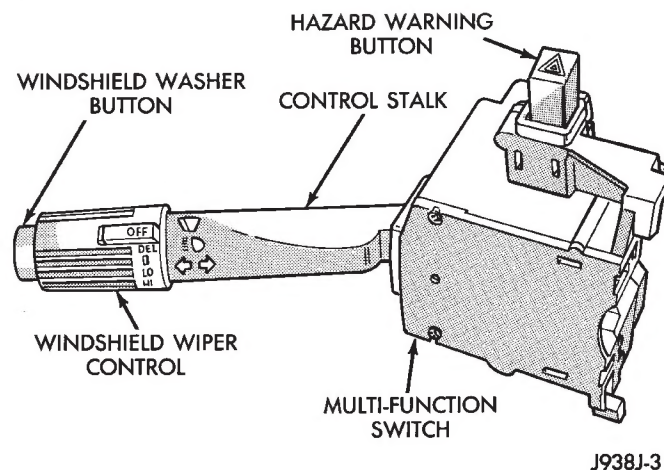


Fig. 1 Multi-Function Switch

TURN SIGNAL INDICATOR LAMPS

These lamps are located in the instrument cluster. They flash with the exterior turn signal lamps to give the driver a visual indication that a turn signal or the hazard warning circuit is operating. For diagnosis and service of this component, refer to Group 8E - Instrument Panel and Gauges.

TURN SIGNAL LAMPS

The exterior lamps included in the turn signal and hazard warning circuits include: the front park/turn signal, and the rear tail/stop/turn signal. For diagnosis and service of these lamps, refer to Group 8L - Lamps.

DIAGNOSIS

When diagnosing the turn signal or hazard warning circuits, remember that high generator output can burn out bulbs rapidly and repeatedly. If this is a problem on the vehicle being diagnosed, refer to Group 8A - Battery/Starting/Charging Systems Diagnostics to test charging system.

WARNING: ON VEHICLES EQUIPPED WITH AN AIRBAG, REFER TO GROUP 8M - RESTRAINT SYSTEMS BEFORE ATTEMPTING STEERING WHEEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

TURN SIGNAL/HAZARD WARNING SYSTEM - XJ

(1) Turn ignition switch to ON position. Actuate the turn signal lever or hazard warning button. Observe the turn indicator lamp(s) in the instrument cluster. If the flash rate is very high, check for a turn signal bulb that is not lit. Replace that bulb or repair circuits to that lamp, as required. Test operation. If turn indicator does not light, continue to next step.

(2) Remove and inspect fuse 8 (turn signals) in fuseblock module, or fuse F13 (hazard warning) in the Power Distribution Center. Replace fuse, if required.

(3) Remove combination flasher from relay center and replace with a known good unit. Test operation of turn signal and hazard warning systems. If OK, re-

place faulty combination flasher. If not OK, remove test flasher and go to next step.

(4) With ignition switch in ON position, check for battery voltage at cavity for flasher terminal J 1 (Fig. 2). If OK, go to next step. If not OK, repair circuit to ignition switch as required.

(5) With ignition switch in OFF position, check for battery voltage at cavity for flasher terminal J 2. If OK, go to next step. If not OK, repair circuit to Power Distribution Center as required.

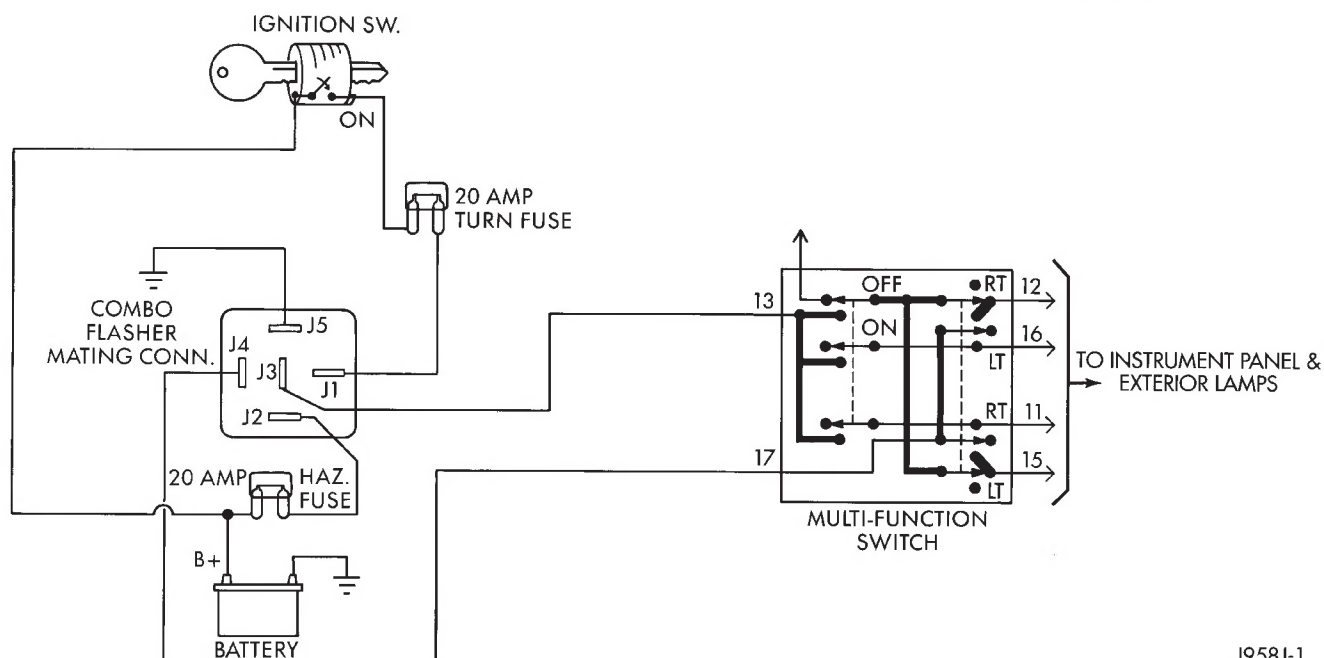
(6) With ignition switch in OFF position, check for continuity between cavity for flasher terminal J 5 and a good ground. There should be continuity. If OK, go to next step. If not OK, repair circuit to ground as required.

(7) Locate the multi-function switch connector. See Multi-Function Switch, in this group. Check for continuity between cavity for flasher terminal J 3 and cavity 13 of the multi-function switch connector. There should be continuity. If OK, go to next step. If not OK, repair open circuit as required.

(8) Check for continuity between cavity for flasher terminal J 4 and cavity 17 of the multi-function switch connector. There should be continuity. If OK, test multi-function switch. If not OK, repair open circuit as required.

TURN SIGNAL SYSTEM - YJ

A turn signal indicator lamp that remains lit (without flashing) is an indication of a burned out exterior turn signal bulb or faulty exterior lamp circuit. Check



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Fig. 2 Combination Flasher Circuit - XJ

lamps and repair circuits or replace bulbs as required. If system still does not function properly, proceed as follows.

(1) Locate fuseblock module under driver's side of instrument panel. Remove and inspect fuse 4. If OK, go to next step. If not OK, replace fuse as required.

(2) Replace turn signal flasher (light blue can in fuseblock module) with a known good unit. Test operation. If OK, replace faulty turn signal flasher. If not OK, remove test flasher and go to next step.

(3) Turn ignition switch to ACCESSORY position. Check for battery voltage at flasher cavity on left (closest to hazard flasher). If OK, go to next step. If not OK, repair circuit to fuse 4 as required.

(4) Turn ignition switch to OFF position. See Turn Signal/Hazard Warning Switch Remove/Install to locate steering column connector. Unplug connector.

(5) Turn ignition switch to ACCESSORY position. Check for battery voltage at connector terminal L. If OK, replace turn signal/hazard warning switch. If not OK, repair circuit between turn signal flasher and steering column connector.

HAZARD WARNING SYSTEM - YJ

(1) Locate Power Distribution Center (PDC) near battery tray in engine compartment. Remove and inspect fuse F5. If OK, go to next step. If not OK, replace fuse as required.

(2) Replace hazard warning flasher (metal can in fuseblock module) with a known good unit. Test operation. If OK, replace faulty hazard warning flasher. If not OK, remove test flasher and go to next step.

(3) Check for battery voltage at flasher cavity on left (closest to hazard flasher). If OK, go to next step. If not OK, repair circuit to fuse F5 in PDC as required.

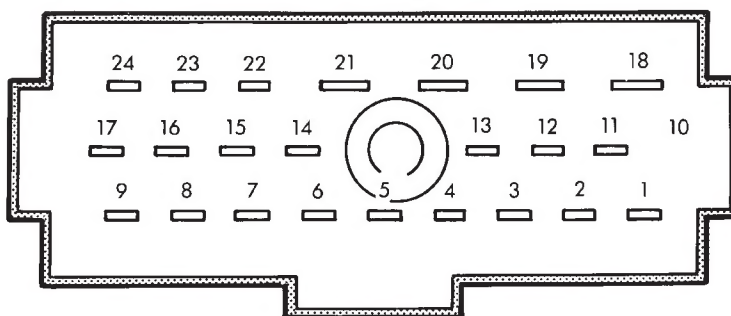
(4) See Turn Signal/Hazard Warning Switch Remove/Install to locate steering column connector. Unplug connector.

(5) Check for battery voltage at connector terminal K. If OK, replace turn signal/hazard warning switch. If not OK, repair circuit between hazard warning flasher and steering column connector.

MULTI-FUNCTION SWITCH - XJ

(1) Access multi-function switch connector and remove. See service procedures for Multi-Function Switch, in this group.

(2) Using an ohmmeter, perform switch continuity checks at the switch terminals as shown in the chart (Fig. 3).



VIEW FROM TERMINAL CASE

TURN SIGNAL	SWITCH POSITIONS		CONTINUITY BETWEEN
	HAZARD WARNING		
NEUTRAL	OFF		12 AND 14 AND 15
LEFT	OFF		15 AND 16 AND 17
LEFT	OFF		12 AND 14
LEFT	OFF		22 AND 23 WITH OPTIONAL CORNER LAMPS
RIGHT	OFF		11 AND 12 AND 17
RIGHT	OFF		14 AND 15
RIGHT	OFF		23 AND 24 WITH OPTIONAL CORNER LAMPS
NEUTRAL	ON		11 AND 12 AND 13 AND 15 AND 16

Fig. 3 Multi-Function Switch Continuity

SERVICE PROCEDURES

WARNING: ON VEHICLES EQUIPPED WITH AN AIRBAG, REFER TO GROUP 8M - RESTRAINT SYSTEMS BEFORE ATTEMPTING STEERING WHEEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

MULTI-FUNCTION SWITCH REMOVE/INSTALL - XJ

- (1) Disconnect battery negative cable.
- (2) Remove tilt lever (if equipped).
- (3) Remove lower instrument panel/knee blocker (Fig. 4).

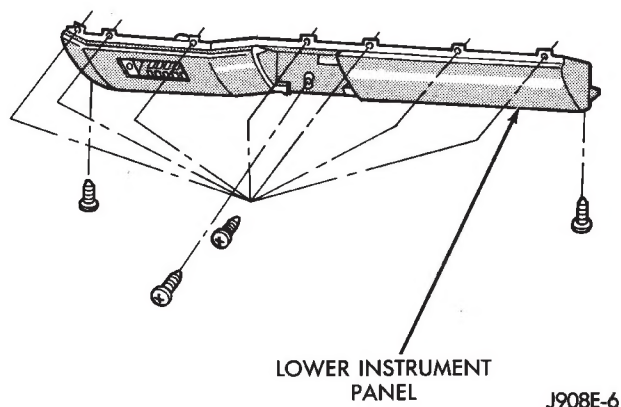


Fig. 4 Lower Instrument Panel/Knee Blocker Remove/Install

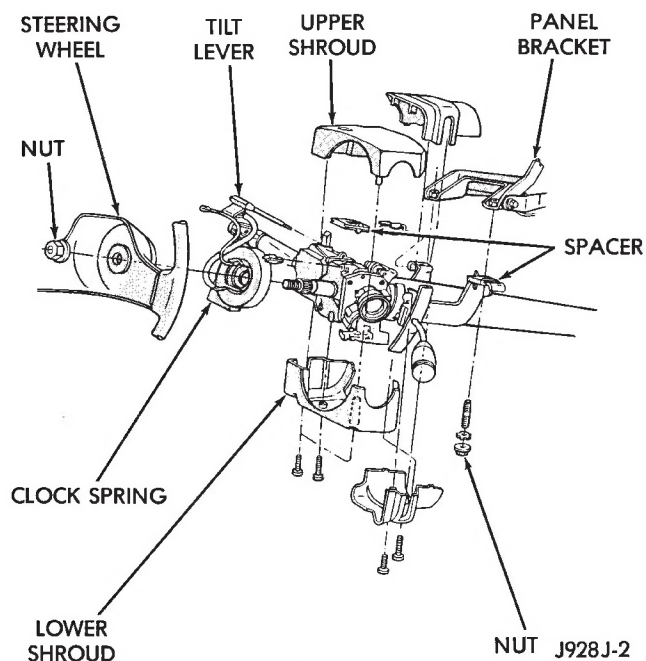


Fig. 5 Steering Column Shrouds Remove/Install

- (4) Remove both upper and lower shrouds from column (Fig. 5).
- (5) Remove lower fixed column shroud.
- (6) Loosen steering column upper bracket nuts. Do not remove nuts.
- (7) Move upper fixed column shroud to gain access to rear of multi-function switch (Fig. 6).

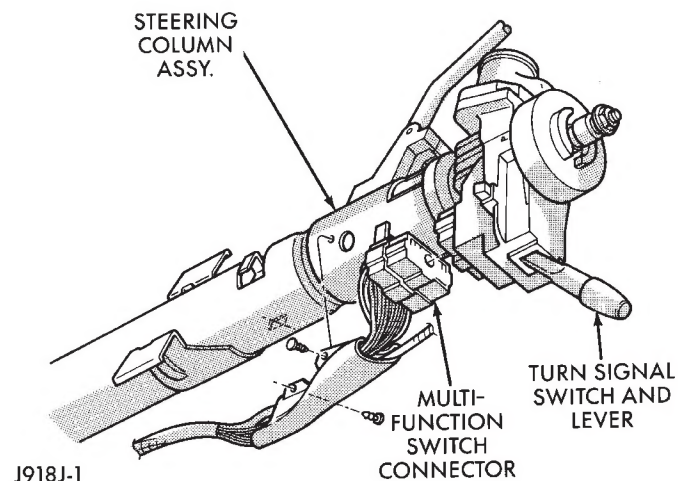
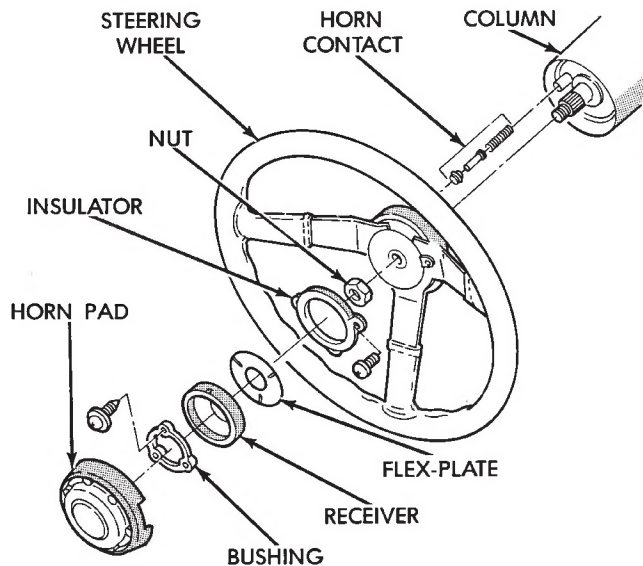


Fig. 6 Multi-Function Switch Connector

- (8) Remove multi-function switch tamper proof mounting screws (tamper proof torx bit Snap On TTXR20B2 or equivalent required).
- (9) Gently pull switch away from column. Loosen connector screw. The screw will remain in the connector.
- (10) Remove wiring connector from multi-function switch.
- (11) Reverse removal procedures to install. Tighten fasteners as follows:
 - multi-function switch connector screw - 1.9 N·m (17 in. lbs.)
 - multi-function switch retaining screws - 1.9 N·m (17 in. lbs.)
 - steering column upper bracket nuts - 12 N·m (110 in. lbs.).

TURN SIGNAL/HAZARD WARNING SWITCH REMOVE/INSTALL - YJ

- (1) Disconnect battery negative cable.
- (2) Remove the horn button with a push and turn motion.
- (3) Remove the horn button components (Fig. 7).
- (4) Turn ignition switch to LOCK position and remove steering wheel nut and washer.
- (5) Scribe an alignment mark on the steering in line with the mark already existing on the end of the steering column.



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Fig. 7 Steering Wheel Remove/Install

(6) Remove vibration damper from the steering column hub, if equipped.

(7) Remove the steering wheel using a steering wheel puller. DO NOT hammer on puller or end of steering shaft.

WARNING: TO REMOVE THE STEERING SHAFT SNAP RING IN THE FOLLOWING STEP, THE LOCKPLATE MUST BE COMPRESSED. DO NOT ATTEMPT TO REMOVE THE LOCKPLATE WITHOUT COMPRESSOR TOOL C4156 AS THE LOCKPLATE IS UNDER HEAVY SPRING TENSION.

(8) Compress lockplate with compressor tool C4156.

(9) Remove steering shaft snap ring (Fig. 8). Discard snap ring. It is not reusable.

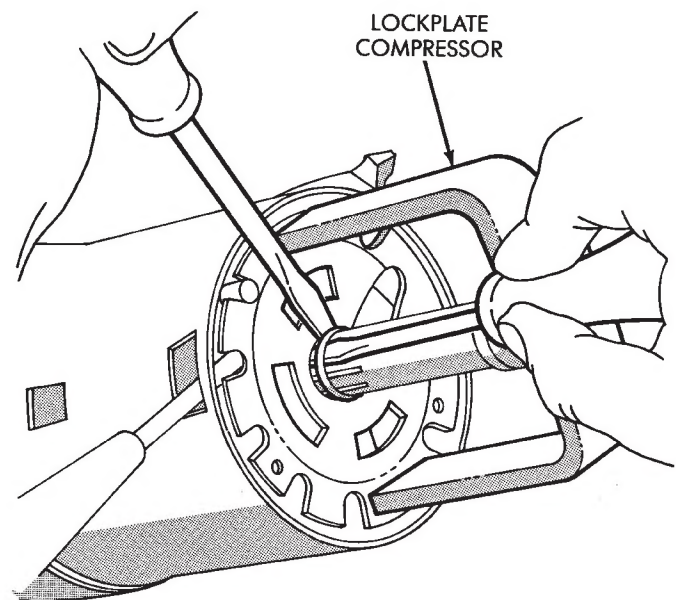
(10) Remove compressor tool.

(11) Remove lockplate, cancelling cam, and upper bearing preload spring.

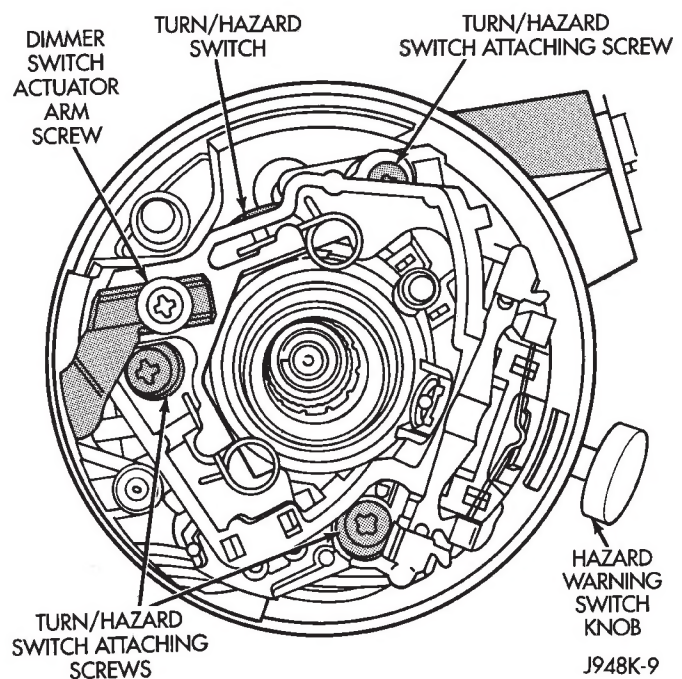
(12) Remove horn button components from cancelling cam.

(13) Remove the screw and hazard warning switch knob.

(14) Remove dimmer switch actuator arm attaching screw (Fig. 9).



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Fig. 8 Lockplate Remove

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Fig. 9 Turn/Hazard Switch and Dimmer Actuating Arm Screws

- (15) Remove turn/hazard switch attaching screws.
- (16) Remove 6 housing screws (Fig. 10).

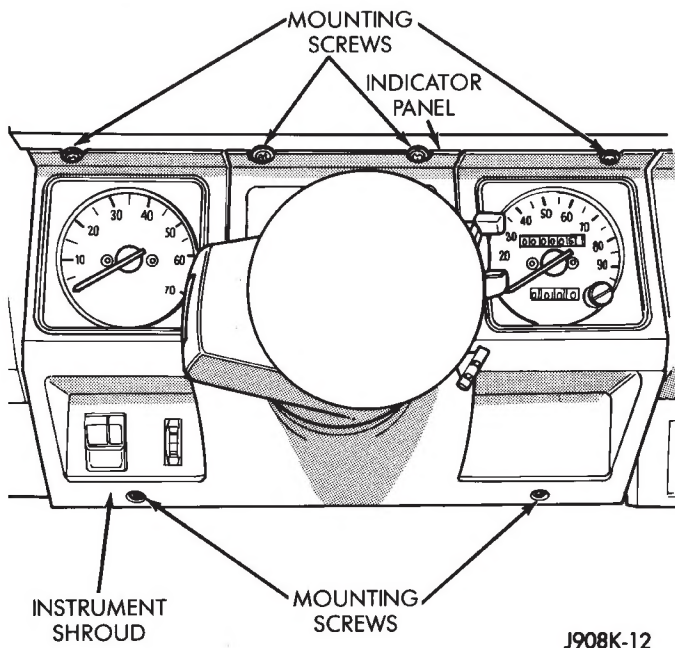


Fig. 10 Instrument Housing Remove/Install

- (17) Slide housing toward steering wheel.
- (18) Remove cover under column.
- (19) If vehicle is equipped with a column shift, remove PRNDL cable clip (Fig. 11).

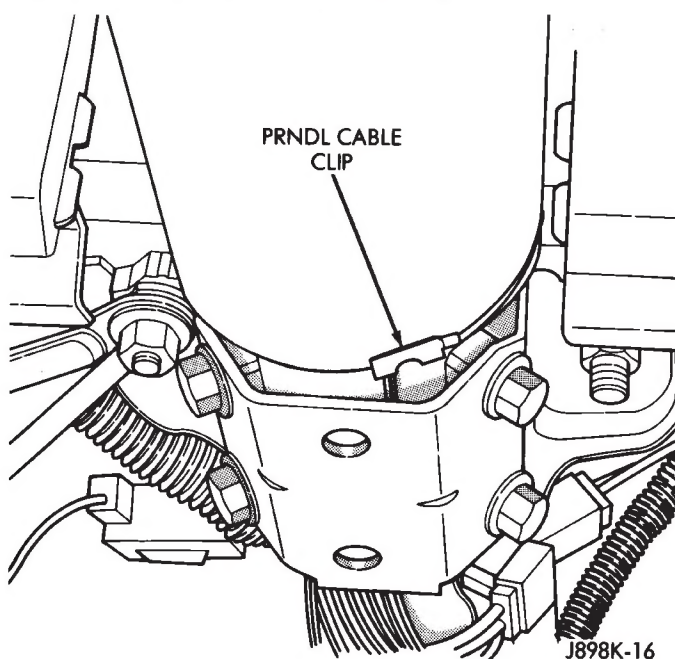


Fig. 11 PRNDL Cable Clip Remove/Install

- (20) Remove 2 nuts holding steering column bracket to brake sled (Fig. 12).
- (21) Remove 4 bolts holding steering column bracket to column.

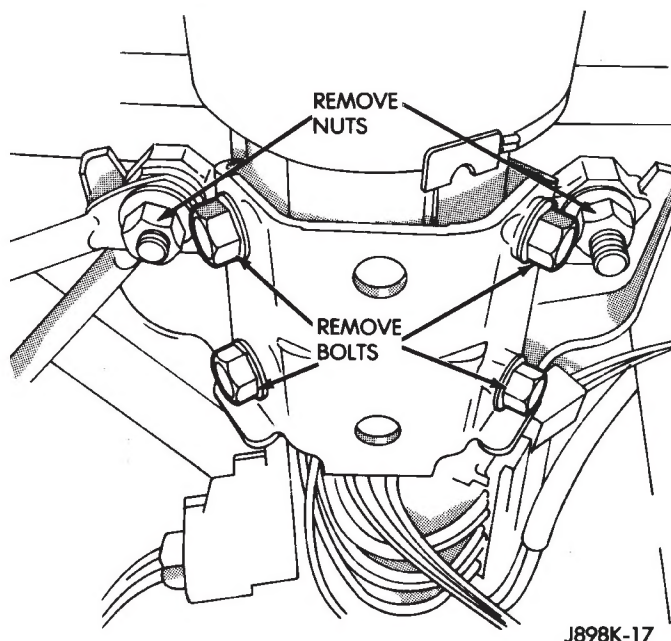


Fig. 12 Lower Steering Column

- (22) Loosen column brace mounting nut at drivers side kick panel. This will allow column to drop.
- (23) Push turn/hazard connector up and out of steering column connector (Fig. 13).

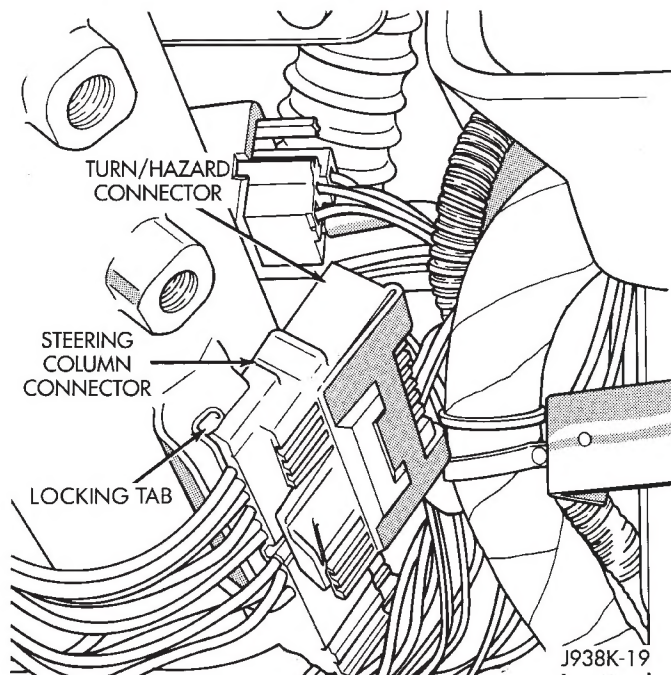


Fig. 13 Turn/Hazard Switch and Steering Column Connectors

(24) Pry up locking tabs of steering column connector and remove connector from column bracket.

(25) Tape connector to wires as shown (Fig. 14).

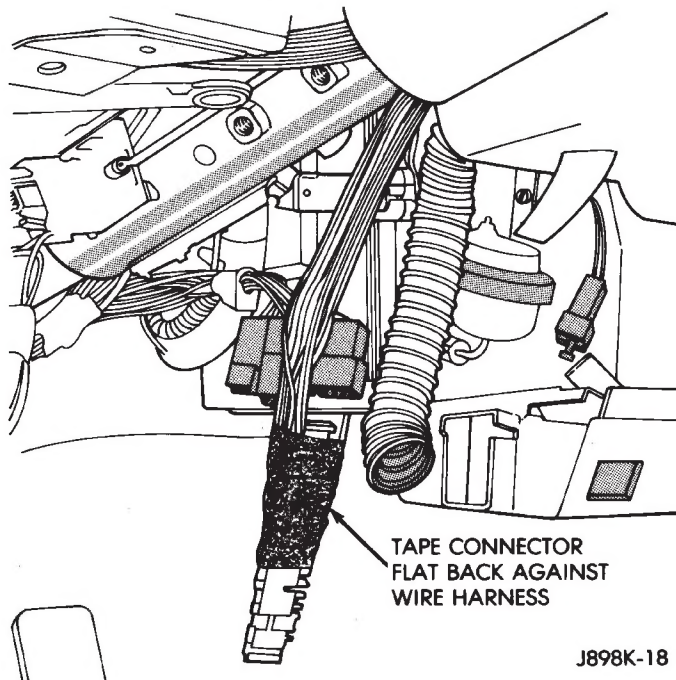


Fig. 14 Tape Wiper Switch Connector

(26) Remove plastic harness cover by pulling it up and over the weld nuts then open and slide the cover off the harness (Fig. 15).

(27) Remove the turn/hazard switch. Pull the switch and wire harness straight up and out of the housing.

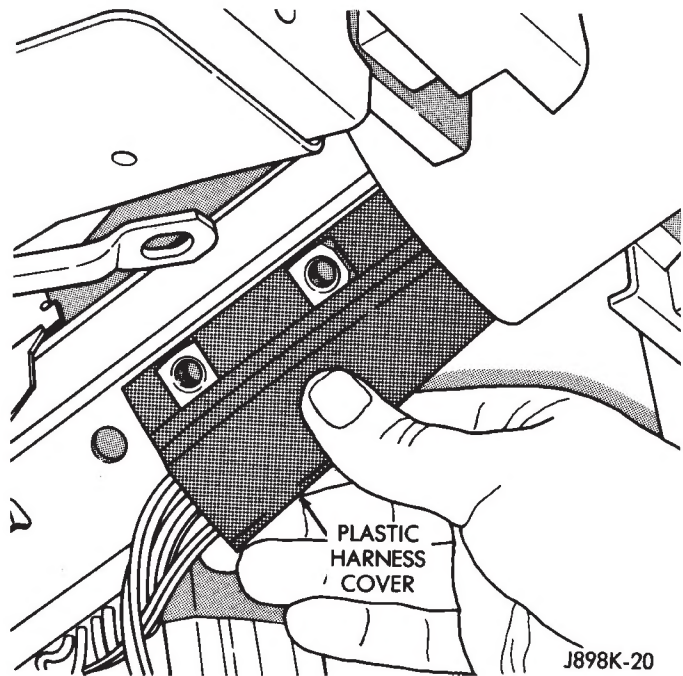


Fig. 15 Remove Plastic Harness Cover

(28) To install a new switch, reverse the removal procedure.

CAUTION: When installing a turn/hazard switch, make sure wires are laying flat on bottom inside column.

On vehicles equipped with column shift, install the PRNDL cable clip with the shift indicator on N (neutral). Move the selector through the range and make sure it lines up with each letter.

(29) Adjust the headlamp dimmer switch as described in Group 8L - Lamps.